#3. 다음 부정적분을 구하라

(1) $\int x \ln x \, dx$

$g'(x) = x \qquad f(x) = \ln x$

$g(x) = \frac{1}{2}x^2 \qquad f'(x) = \frac{1}{x}$

$\Rightarrow \int x \ln x \, dx = \frac{1}{2}x^2 \ln x - \int \frac{1}{2} x \, dx$

$= \frac{1}{2}x^2 \ln x - \frac{1}{4}x^2 + C$

(2) $\int (\cos x)(\sin^2 x) \, dx$

$\sin x = z, \quad \cos x \, dx = dz$

$\Rightarrow \int (\cos x)(\sin^2 x) \, dx = \int z^2 \, dz$

$= \frac{1}{3}z^3 + C = \frac{1}{3}\sin^3 x + C$